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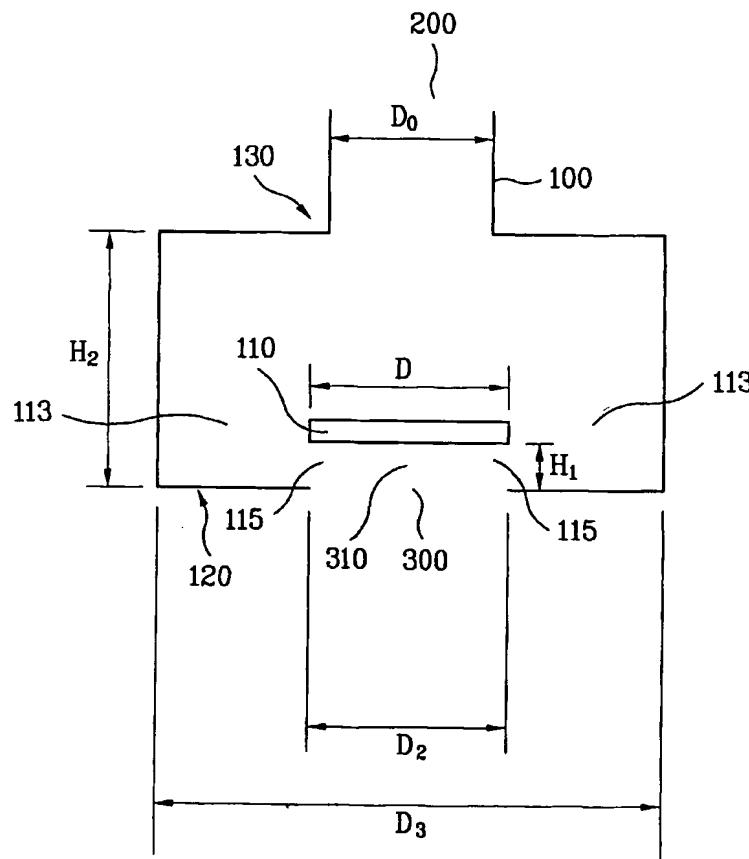
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[Continued on next page]

(54) Title: FLOW SPREADING MECHANISM



(57) Abstract: The present invention relates to a flow spreading mechanism, in particular a flow spreading mechanism used with refrigerators or air conditioners to enhance spreading of cool or warm air. To achieve the above-mentioned object, this invention comprises at least one inlet (200) through which fluid flow comes in; a flow separator means (110) dividing the flow coming through the at least one inlet (200) into at least two separate flows; and an outlet (300) through which at least two of the at least two flows having been divided into separate flows by the flow separator means go out after they meet again, thereby forming complex vortices near the outlet, which make the flow going out of the outlet swing. Flow spreading mechanism of the present invention provides a better uniformity of temperature distribution for refrigerators or air conditioners, compared with the simple-ducted outlet of the prior art.



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INTERNATIONAL SEARCH REPORT

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PCT/KR 2002/002272

CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁷: F24F, B01F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EpoDoc, WPI, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2043074 A (MAN) 12 February 1971 (12.02.1971) <i>the whole document.</i>	1 - 21
X	FR 2784313 A (BRUNON) 14 April 2000 (14.04.2000) <i>the whole document.</i>	1 - 21
X	US 6135629 A (DOHMANN) 24 October 2000 (24.10.2000) <i>the whole document.</i>	1 - 21
X	US 2001/0053108 A (JAHN) 20 December 2001 (20.12.2001) <i>the whole document.</i>	1 - 21

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)			Publication date
FR A 2043074	1971-02-12	DE	A	1917962	1971-02-25
		BE	A	748677	1970-09-06
PR A 2784313	2000-04-14	EP	A	1128890	2001-09-05
		WO	A	0020097	2000-04-13
		AU	A	6093099	2000-04-26
US A 20010053 108				none	
US A 6135629	2000-10-24	TW	B	499321	2002-08-21
		JP	A	2000061283	2000-02-29
		PL	A	333040	1999-11-22
		EP	A	0956897	1999-11-17
		DE	A	19820992	1999-11-18